

# *STATUS UPDATE OF CALIFORNIA'S BIOMASS POWER SECTOR*



Tree Mortality  
Workshop

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# PRESENTATION OVERVIEW

- Brief history and overview of California's biomass power sector
- Governor's Oct 30, 2015 proclamation and its implications
- Current status
- BioRAM I
- BioRAM II
- SB 1122
- Observations
- Questions



# ABBREVIATED HISTORY OF THE CALIFORNIA BIOMASS POWER SECTOR



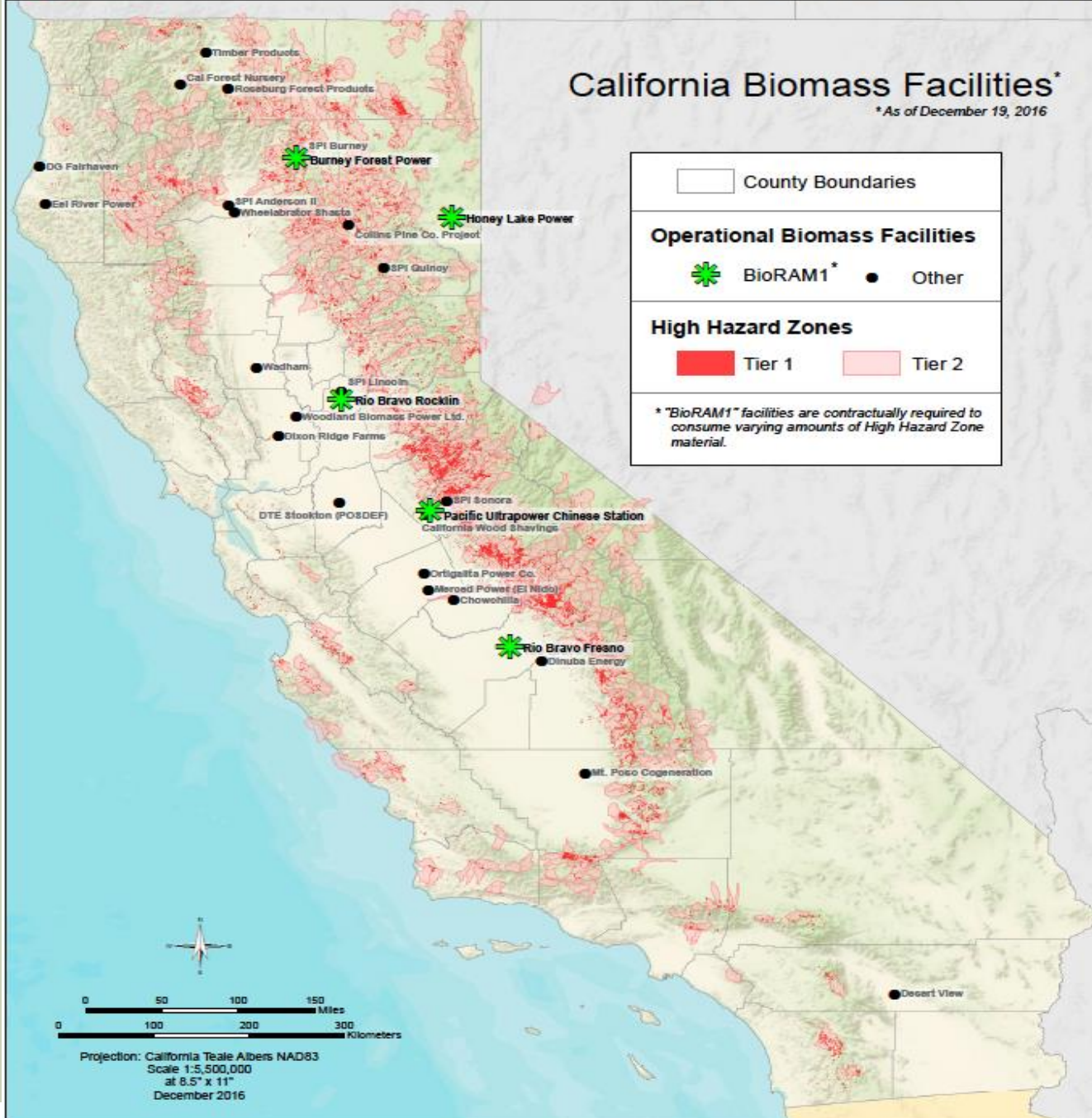
- Forest products sector was an early adopter.
- Public Utilities Regulatory Policy Act of 1978 (Federal).
  - Market response – 60+ new biopower plants (approx. 900+ MW of generation capacity).
- Power contract buyouts.
- CA Renewable Portfolio Standard – 50% renewable by 2030.
- Currently 21 operating plants (approx. 540 MW of capacity).
- Senate Bill 1122.
- Gov's Proclamation
- SB 859





## California Biomass Facilities\*

\*As of December 19, 2016



# CURRENT OPERATING FACILITIES

- 21 biomass plants in commercial service – about 540 MW capacity.
- Utilize a blend of urban, ag and forest feedstocks. Urban feedstock is the low price leader, then ag, with forest biomass as the highest priced.
- Power Purchase Agreements for many of these facilities term out by 2020.
- Six existing plants have PPAs extended due to Governor Brown's October 30 Proclamation and SB 859.
- 15 idle plants with about 260 MW capacity.
- Most recent entry is SPI Anderson at 31 MW.



# RESPONSE TO GOVERNOR'S EMERGENCY PROCLAMATION

- CA Legislature Response:
  - Senate Bill 859 is signed by the Governor in Sept 2016.
- CA PUC response:
  - Directed investor owned utilities (PG&E, SCE, SDG+E) and publicly owned utilities (SMUD, LADWP, IID, MID, etc.) to procure power from facilities that source forest biomass using the Renewable Auction Mechanism.
  - BioRAM only applies to IOU's and POU's with at least 100,000 customers.
  - Target allocation is at least 180 MW.
  - Applies only to biomass power plants on line before June 1, 2013.



# BIORAM I AND BIORAM II DETAILS

- Power Purchase Agreements are a minimum of five years duration targeting 180 MW (minimum).
- BioRAM I fuel requirements:
  - 2016: 40% from HHZ
  - 2017: 50% from HHZ
  - 2018: 60% from HHZ
  - 2019 and out: 80% from HHZ
- BioRAM II fuel Requirements:
  - 80% from “sustainable” forest management with at least 60% from HHZ.
- Fuel tracking protocols require plants to report quarterly to the IOU’s.
- If BioRAM I plants do not meet minimum fuel sourcing requirements then either the PPA is terminated or the energy price drops to \$89.23/MWh.





# BIORAM I AND II FACILITIES

FACILITY	SCALE (MW)	ANNUAL FEEDSTOCK USAGE (BDT/YEAR)
Pacific Ultrapower Chinese Station	18	144,000
Rio Bravo Fresno Biomass	24	192,000
Rio Bravo Rocklin Biomass	24	192,000
Burney Forest Power	29	232,000
Wheelabrator (BioRam II)	34	272,000
Greenleaf Power / Honey Lake	24	192,000
<b>Totals</b>	<b>153</b>	<b>1,224,000</b>





# BIORAM I AND II FACILITY FUEL MANAGERS

<b>FACILITY</b>	<b>Fuel Manager</b>	<b>Email address</b>	<b>Phone</b>
Pacific Ultrapower Chinese Station	Dennis Serpa	dserpa@chinesestation.net	209.984.4660
Rio Bravo Fresno Biomass	Hector Lara	hlara@rbfresno.com	559.264.4575
Rio Bravo Rocklin Biomass	Eric Olsen	eolsen@rbrocklin.com	916.645.3383
Burney Forest Power	Tom Hickman	thickman@burneyforest power.com	530.335.5023
Wheelabrator (BioRam II)	Gordon Bauer	gbauer@wtienergy.com	530.339.7626
Greenleaf Power / Honey Lake	Mark Shaffer	mshaffer@greenleaf-power.com	530.254.6161

# SB 1122 BIOENERGY MARKET ADJUSTING TARIFF (BIOMAT)

- Signed into law Sept 2012.
- Bioenergy specific carve out for 250 MW of small-scale (3 MW or less) distributed generation.
  - Urban sourced – 110 MW
  - Dairy and other Ag sourced – 90 MW
  - Forest sourced – 50 MW
- Designed to address waste diversion and air emissions reduction goals of the CA Energy Commission, CalRecycle, CA Air Resources Board and the State's Bioenergy Action Plan.
- Administered by the CA Public Utilities Commission.
- BioMAT Category 3 auction currently underway.

# SENATE BILL 1122 FEEDSTOCK REQUIREMENTS FOR FOREST BIOMASS

- At least 80% sourced as byproducts of “Sustainable Forest Management”
  - Sustainable Forest Management as designated by CPUC
  - Verified by third party
- Other 20% of feedstock:
  - Byproducts of agricultural operations
  - Clean urban wood waste
- Annual Reporting to the CPUC
  - Volume by feedstock type







Phoenix Energy 500 kWh Gasification Unit at  
Merced, CA



# COMMUNITY-SCALE BIOPOWER FACILITY EXAMPLE – NORTH FORK COMMUNITY POWER

- 2 MW project being considered at North Fork, California.
- New plant construction cost = \$10 to \$12 million.
- Will consume about 46 BDT/day (approx. 1BDT/MWh burn rate).
- Biomass transported approx. 30 - 40 miles (one way).
- Most feedstock in the early years will be cull logs from drought and beetle kill clean up/restoration.
- Commercial operations should commence Q2 2018.
- Average electrical energy economic production cost:  
~ \$0.15 - \$0.17/kWh



# SB 1122 PROJECTS IN EARLY PHASE DEVELOPMENT

Facility	Scale (MW)	Annual Feedstock Usage (BDT/Year)	Location
North Fork Community Power	2	16,000	North Fork
CHIPS Value-Added Product Yard	3	24,000	Wilseyville
Burney Hat Creek Bioenergy	3	24,000	Burney
Crescent Mills Wood Utilization Campus	3	24,000	Crescent Mills
Collins Pine	3	24,000	Chester
Camptonville Community Partnership	3	24,000	Camptonville
Nevada County Bioenergy	3	24,000	Grass Valley
Mariposa Biomass Project	2	16,000	Mariposa
<b>Totals</b>	<b>22</b>	<b>176,000</b>	

# ADDITIONAL RESOURCES

Statewide Wood Energy Team

<http://ucanr.edu/sites/swet/>

Placer Co Air Pollution Control District

<http://www.placer.ca.gov/departments/air/apcdbiomass>

CA Biomass Energy Alliance

<http://www.calbiomass.org/>

Bioenergy Association of California

<http://www.bioenergyca.org/>

UC Division of Ag and Natural Resources

<http://ucanr.edu/sites/WoodyBiomass/>

CA Biomass Collaborative

<http://biomass.ucdavis.edu/about/>

# OTHER VALUE-ADDED USES

- Fuel pellets
- Animal bedding
- Landscape cover
- Soil amendment
  - Mulch
  - Biochar
- Firewood
- Post and poles
- Transportation fuels



# QUESTIONS or HECKLING REMARKS?



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